① Solve for x

ⓐ $\log 8^x = 100$

$\log 8x = \log 100$

$x = \frac{\log 100}{\log 8}$

$x = 2.214$

ⓑ $\log_3 50 = x$

$3^x = 50$

$\log 3x = \log 50$

$x = \frac{\log 50}{\log 3}$

$x = 3.5609$

$7^x = 47$

$\log_7 47 = x$

$x = \frac{\log 47}{\log 7}$

② You invest $3000 at 7.5% APR compounded monthly.

ⓐ write an equation to model this situation $y = 3000\left(1+\frac{0.075}{12}\right)^{12x}$

ⓑ how long will it take to double?

$y = 3000\left(1+\frac{0.075}{12}\right)^{12x}$

$\frac{6000}{3000} = \frac{3000\left(1+\frac{0.075}{12}\right)^{12x}}{3000}$

$2 = \left(1+\frac{0.075}{12}\right)^{12x}$

$\log 2 = \log\left(1+\frac{0.075}{12}\right)(12x)$

$\frac{\log 2}{\log\left(1+\frac{0.075}{12}\right)} = 12x$

$\frac{111.2597}{12} = \frac{12x}{12}$

$9.271 = x$

9-10 years

Solve, watch for patterns

① $\log(2) + \log(5) = \log(10) = 1$

② $\log(2) + \log(50) = \log(100) = 2$

③ $\log(20) + \log(50) = \log(1000) = 3$

④ $\log(150) = 2.17609$

⑤ No Calc. $\log(3) + \log(50) = \log(150) = 2.17609$

$$\log_a x + \log_a y = \log_a(xy)$$

Solve, watch for patterns

① $\log(50) - \log(5) = 1$

② $\log(3000) - \log(3) = 3$

③ $\log(150) - \log(1.5) = 2$

④ $\log 150 = 2.17609$

⑤ $\log(450) - \log(3) = 2.17609$

No Calc.

$$\log_a x - \log_a y = \log_a \frac{x}{y}$$

① Compare $\log 100$ and $\log 100^3$ 2 and 6

② Compare $\log(1000)$ and $\log(1000^4)$ 3 and 12

③ Compare $\log 2$ and $\log 2^3$ 0.301 and 0.903

④ $\log 1.78 = 0.250$

⑤ No calc. What is $\log 1.78^3$? $= 0.75$

$$\log_a x^n = n \cdot \log_a x$$

8.4 #12-28(eve), 44-46, 82-84, 96-99

8.5 #2-12(eve)

(14) $\log 8 - 2\log 6 + \log 3$

$\log 8 - \log 6^2 + \log 3$

$\log\left(\frac{8 \cdot 3}{6^2}\right) = \log\left(\frac{24}{36}\right) = \log\left(\frac{2}{3}\right)$